

on July 14, 2000 and the entire contents of which are hereby incorporated by reference.

5 WHAT IS CLAIMED AS NEW AND IS DESIRED TO BE SECURED BY LETTER
PATENT OF THE UNITED STATES IS:

1. A binding apparatus, comprising:

a receiving device configured to receive a sheet from outside and convey the sheet;

10 a sheet folding device configured to fold the sheet conveyed by the receiving device in two at a center portion thereof in a direction the sheet is conveyed so as to be a folded sheet and convey the folded sheet with the folded portion thereof being a leading edge of the folded sheet;

15 a jogging device including a jogging table, configured to receive and jog the folded sheet, conveyed by the sheet folding device, one after another, so as to be stacked into a stack of folded sheets on the jogging table;

a binding device configured to bind the stack of folded sheets stacked on the jogging table at an edge portion of the stack of folded sheets at the side where the folded portion of each folded sheet of the stack of folded sheets is located; and

20 a discharging device configured to discharge the bound stack of folded sheets.

2. The binding apparatus of Claim 1, further comprising:

25 a controller to control an operation of the apparatus, the controller receiving information on a size of the sheet conveyed from outside, wherein the sheet folding device includes a guiding device configured to guide the sheet conveyed by the receiving device and a sheet folding/pressing device

configured to fold the sheet conveyed by the receiving device and press the folded sheet, the guiding device including a stopping device configured to stop the sheet being conveyed by the receiving device to be conveyed,

wherein a position the stopping device stops the sheet to be conveyed is set by the controller according to the information on the size of the sheet so that the sheet is folded at the center portion of the sheet by the sheet folding/pressing device, and

wherein the sheet being conveyed by the receiving device is stopped to be conveyed by the stopping device, so that the center portion of the sheet is downwardly slackened, the slackened centered portion of the sheet is pinched into the sheet folding/pressing device, and thereby the sheet is folded in two at the center portion thereof by the sheet folding/pressing device.

3. The binding apparatus of Claim 2,

the sheet folding device further including a detect device configured to detect a leading edge of the sheet guided by the guiding device, a pushing device configured to push the slackened center portion of the sheet toward the sheet folding/pressing device, and a pushing device moving device configured to move the pushing device downwardly toward the sheet folding/pressing device so as to push the slackened center portion of the sheet toward the folding/pressing device and upwardly so as to separate from the sheet folding/pressing device,

wherein the pushing device moving device moves the pushing device downwardly to push the slackened center portion of the sheet toward the sheet folding/pressing device at a predetermined timing after detection of the leading edge of the sheet with the detect device, so that the slackened center portion of the sheet is pushed by the pushing device so as to be pinched into and thereby the sheet is folded in two at the center portion thereof by the sheet folding/pressing

device.

4. The binding apparatus of Claim 3,

the pushing device including a saw-toothed knife to push the center portion
5 of the sheet, so that the sheet is perforated at the pushed center portion of the
sheet when the saw-toothed knife pushes the center portion of the sheet.

5. The binding apparatus of Claim 1,

the sheet folding device including a sheet folding/pressing device having a
10 pair of sheet folding rollers and a pair of supplementary pressing rollers,
wherein the pair of supplementary pressing rollers is arranged downstream of
the pair of sheet folding rollers in the direction the folded sheet is conveyed and is
angled relative to the pair of sheet folding rollers, and

wherein a distance between a nip portion of the pair of supplementary rollers
15 and a nip portion of the pair of the sheet folding rollers at a position corresponding
to a widthwise edge of the folded sheet, at a side of a widthwise direction where the
pair of the supplementary rollers and the pair of sheet folding rollers are farther
separated from each other, is shorter than a length of the folded sheet in the
direction the folded sheet is conveyed.

20

6. The binding apparatus of Claim 1, further comprising:

a controller to control an operation of the apparatus, the controller receiving
information on a size of the sheet conveyed from outside,

wherein the jogging device includes a leading edge stopping device configured
25 to stop the folded sheet to be conveyed at the leading edge thereof, and a left side
jogging device configured to jog the folded sheet with respect to a left side of the
folded sheet in a direction the folded sheet is conveyed, a right side jogging device

configured to jog the folded sheet with respect to a right side of the folded sheet, and a rear side jogging device configured to jog the folded sheet with respect to a rear side of the folded sheet, each including an upper guide member to guide the folded sheet being conveyed by the sheet folding device toward the jogging table and a jogging member to jog the folded sheets on the jogging table,

wherein the upper guide member of each of the left side, right side and rear side jogging devices is configured to swing between a horizontal position where the upper guide member is substantially horizontal so as to hold down a previously conveyed folded sheet on the jogging table and so that the folded sheet being conveyed by the sheet folding device slides over an upper surface of the upper guide member to be stopped by the leading edge stopping device and a slanted position where the upper guide member is upwardly slanted,

wherein each of the left side, right side and rear side jogging devices is configured to move to a first position where the upper guide member thereof in the horizontal position separates from the folded sheet carried on the upper surfaces of the upper guide members of the left side, right side and rear side jogging devices and to a second position where the jogging member thereof is in a position corresponding to a size of the folded sheet being conveyed by the folding device, which is determined by the controller according to the information on the size of the sheet, and

wherein, when the folded sheet is conveyed to the jogging device by the sheet folding device, each of the left side, right side and rear side jogging devices is in the second position and the upper guide member of each of the left side, right side and rear side jogging devices is in the horizontal position.

7. The binding apparatus of Claim 6,

wherein, after the folded sheet has been conveyed by the folding device to

th jogging device so as to slid ov r the upp r surfaces of the upp r guide members of the left side, right side and rear side jogging devices, each of the left side, right side and rear side jogging devices moves, with the upper guide member thereof kept in the horizontal position, to the first position, where the upper guide member of each of the left, right and rear side jogging devices is swung to the slanted position, and each of the left, right and rear sides jogging devices is then moved to the second position, where the upper guide member of each of the left side, right side and rear side jogging devices is returned to the horizontal position.

8. The binding apparatus of Claim 6,
wherein the leading edge stopping device including a leading edge binding position adjusting device configured to change a position the leading edge stopping device stops the folded sheet to be conveyed so that a position in the folded sheet relative to the leading edge thereof where the binding device binds the folded sheet is changed.

9. The binding apparatus of Claim 6,
wherein the folding device includes a detect device configured to detect that the folded sheet is discharged toward the jogging device, and

wherein the jogging device includes a sheet center thrusting device configured to swing between a horizontal position to downwardly thrust the folded sheet carried on the upper surfaces of the upper guide members of the left side, right side and rear side jogging devices and a slanted position where the sheet center thrusting device is upwardly slanted, and a sheet center thrusting device driving device configured to drive the sheet center thrusting device so as to swing between the horizontal position and the slanted position.

09867

5

10

15

20

25

25

25

device stops the folded sheet to be conveyed so that a position in the folded sheet relative to the leading edge thereof where the binding device binds the folded sheet is changed.

- 5 13. The binding apparatus of Claim 1,
 wherein the binding device includes a stapler to staple the stack of folded
 sheets stacked on the jogging table so as to be bound.

- 10 14. A sheet folding apparatus, comprising:
 a pair of sheet folding rollers; and
 a pair of supplementary pressing rollers,
 wherein the pair of supplementary pressing rollers is arranged downstream of
 the pair of sheet folding rollers in a sheet conveyance direction and is angled
 relative to the pair of sheet folding rollers, and a distance between a nip portion of
15 the pair of supplementary rollers and a nip portion of the pair of the sheet folding
 rollers at a position corresponding to a widthwise edge of the sheet, at a side of a
 widthwise direction where the pair of the supplementary rollers and the pair of sheet
 folding rollers are farther separated from each other, is shorter than a length of the
 folded sheet in the sheet feeding direction, and
20 wherein a portion of a sheet is pinched into the pair of sheet folding rollers
 so that the sheet is folded in two by the pair of sheet folding rollers, and then the
 folded sheet is pressed by the pair of supplementary pressing rollers, so that the
 folded portion of the folded sheet is firmly folded.

- 25 15. A jogging apparatus, comprising:
 a jogging table on which a sheet may be stacked one after another;
 a leading edge stopping device configured to stop a sheet conveyed from

271
also
15-19

outside at a leading edge thereof;

a left side jogging device configured to jog the sheet with respect to a left side of the sheet in a direction the sheet is conveyed;

a right side jogging device configured to jog the sheet with respect to a right side of the sheet; and

a rear side jogging device configured to jog the sheet with respect to a rear side of the sheet,

wherein each of the left side, right side, and rear side jogging devices includes an upper guide member to guide the sheet conveyed from outside onto the jogging table one after another so as to be stacked into a stack of sheets on the jogging table and a jogging member to jog the stack of sheets on the jogging table,

wherein the upper guide member of each of the left side, right side and rear side jogging devices is configured to swing between a horizontal position where the upper guide member is substantially horizontal so as to hold down a previously conveyed sheet on the jogging table and so that the sheet being conveyed from outside slides over an upper surface of the upper guide member to be stopped by the leading edge stopping device and a slanted position where the upper guide member is upwardly slanted,

wherein each of the left side, right side and rear side jogging devices is configured to move to a first position where the upper guide member thereof in the horizontal position separates from the sheet carried on the upper surfaces of the upper guide members of the left side, right side and rear side jogging device and to a second position where the jogging member thereof is in a position corresponding to a size of the sheet being conveyed from outside, and

wherein, when the sheet is conveyed, each of the left side, right side and rear side jogging devices is in the second position and the upper guide member of each of the left side, right side and rear side jogging devices is in the horizontal.

09896737 062901

16. The jogging apparatus of Claim 15,

wherein, after the sheet has been conveyed so as to slide over the upper surfaces of the upper guide members of the left side, right side, and rear side jogging devices, each of the left side, right side and rear side jogging devices moves, with the upper guide member thereof kept in the horizontal position, to the first position, where the upper guide member of each of the left side, right side and rear side jogging devices is swung to the slanted position, and each of the left side, right side and rear side jogging devices is then moved to the second position, where the upper guide member of each of the left side, right side and rear side jogging devices is returned to the horizontal position.

17. The jogging apparatus of Claim 15, further including:

a detect device configured to detect that the sheet has been received;

a sheet center thrusting device configured to swing between a horizontal position to downwardly thrust the sheet carried on the upper surfaces of the upper guide members of the left side, right side and rear side jogging device and a slanted position where the sheet center thrusting device is upwardly slanted; and

a sheet center thrusting device driving device configured to drive the sheet center thrusting device so as to swing between the horizontal position and the slanted position.

18. The jogging apparatus of Claim 17,

wherein the sheet center thrusting device driving device drives the sheet center thrusting device downwardly to move to the horizontal position so as to downwardly thrust the sheet carried on the upper surfaces of the left side, right side and rear side jogging devices, after the detect device detects that the sheet has

been conveyed, and to swing back to the slanted position, after each of the left side, right side and rear side jogging devices in the second position moves toward outside to the first position, moves again toward inside to the second position after the upper guide member of each of the left side, right side, and rear side jogging devices is swung to the slanted position, stops at the second position, and the upper guide member of each of the left side, right side, and rear side jogging devices is swung to the horizontal position.

19. The jogging apparatus of Claim 15, the leading edge stopping device including a leading edge binding position adjusting device configured to change a position the leading edge stopping device stops the sheet to be conveyed so that a position in the sheet relative to the leading edge thereof where a binding device binds the sheet is changed.

20. A sheet folding and jogging apparatus, comprising:
a receiving device configured to receive a sheet from outside and convey the sheet;

a sheet folding device configured to fold the sheet conveyed by the receiving device in two at a center portion thereof in a direction the sheet is conveyed so as to be a folded sheet and convey the folded sheet with the folded portion thereof being a leading edge of the folded sheet; and

a jogging device including a jogging table, configured to receive and jog the folded sheet, conveyed by the sheet folding device, one after another, so as to be stacked into a stack of folded sheets on the jogging table.

21. The sheet folding and jogging apparatus of Claim 20, further comprising:

downwardly to push the slackened center portion of the sheet toward the sheet folding/pressing device at a predetermined timing after detection of the leading edge of the sheet with the detect device, so that the slackened center portion of the sheet is pushed by the pushing device so as to be pinched into and thereby the sheet is folded in two at the center portion of the sheet by the sheet folding/pressing device.

23. The sheet folding and jogging apparatus of Claim 22, the pushing device including a saw-toothed knife to push the center portion of the sheet, so that the sheet is perforated at the pushed center portion of the sheet when the saw-toothed knife pushes the center portion of the sheet.

24. The sheet folding and jogging apparatus of Claim 21, the sheet folding device including a sheet folding/pressing device having a pair of sheet folding rollers and a pair of supplementary pressing rollers, wherein the pair of supplementary pressing rollers is arranged downstream of the pair of sheet folding rollers in the direction the folded sheet is conveyed and is angled relative to the pair of sheet folding rollers, and

wherein a distance between a nip portion of the pair of supplementary rollers and a nip portion of the pair of the sheet folding rollers at a position corresponding to a widthwise edge of the sheet, at a side of a widthwise direction where the pair of the supplementary rollers and the pair of sheet folding rollers are farther separated from each other, is shorter than a length of the folded sheet in the direction the folded sheet is conveyed.

25. The sheet folding and jogging apparatus of Claim 21, further comprising:

09896737 "062901
a controller to control an operation of the apparatus, the controller receiving information on a size of the sheet received from outside,

wherein the jogging device includes a leading edge stopping device configured to stop the folded sheet to be conveyed at a leading edge thereof, and a left side jogging device configured to jog the folded sheet with respect to a left side of the folded sheet in a direction the folded sheet is conveyed, a right side jogging device configured to jog the folded sheet with respect to a right side of the folded sheet, and a rear side jogging device configured to jog the folded sheet with respect to a rear side of the folded sheet, each including an upper guide member to guide the folded sheet being conveyed by the sheet folding device toward the jogging table and a jogging member to jog the folded sheets on the jogging table,

wherein the upper guide member of each of the left side, right side and rear side jogging devices is configured to swing between a horizontal position where the upper guide member is substantially horizontal so as to hold down a previously conveyed folded sheet on the jogging table and so that the folded sheet being conveyed by the sheet folding device slides over an upper surface of the upper guide member to be stopped by the leading edge stopping device and a slanted position where the upper guide member is upwardly slanted,

wherein each of the left side, right side and rear side jogging devices is configured to move to a first position where the upper guide member thereof in the horizontal position separates from the folded sheet carried on the upper surfaces of the upper guide member of the left side, right side and rear side jogging devices and to a second position where the jogging member is in a position corresponding to a size of the folded sheet being conveyed by the folding device, which is determined by the controller according to the information on the size of the sheet, and

wherein, when the folded sheet is conveyed to the jogging device by the sheet folding device, each of the left side, right side and rear side jogging devices is

in the second position and the upper guide member of each of the left side, right side and rear side jogging devices is in the horizontal position.

26. The sheet folding and jogging apparatus of Claim 25,

5 wherein, after the folded sheet has been conveyed by the folding device to the jogging device so as to slide over the upper surfaces of the upper guide members of the left, right, and rear side jogging devices, each of the left, right, and rear side jogging devices moves, with the upper guide member thereof kept in the horizontal position, to the first position, where the upper guide member of each of
10 the left, right, and rear sides jogging devices is swung to the slanted position, and each of the left side, right side, and rear side jogging devices is then moved to the second position, where the upper guide member of each of the left side, right side, and rear side jogging devices is returned to the horizontal position.

15 27. The sheet folding and jogging apparatus of Claim 25,

wherein the folding device includes a detect device configured to detect that the folded sheet is discharged toward the jogging device, and

wherein the jogging device includes a sheet center thrusting device configured to swing between a horizontal position to downwardly thrust the folded
20 sheet carried on the upper surfaces of the upper guide members of the left side, right side and rear side jogging devices and a slanted position where the sheet center thrusting device is upwardly slanted, and a sheet center thrusting device driving device configured to drive the sheet center thrusting device so as to swing between the horizontal position and the slanted position.

25 28. The sheet folding and jogging apparatus of Claim 27,

wherein the sheet center thrusting device driving device drives the sheet

09896737.062901
c nt r thrusting device downwardly to move to the horizontal position so as to
downwardly thrust the folded sheet carried on the upper surfaces of the upper guide
members of the left side, right side and rear side jogging devices, after the detect
device detects that the folded sheet has been discharged toward the jogging device,
5 and to swing back to the slanted position, after each of the left side, right side, and
rear side jogging devices in the second position moves toward outside to the first
position, moves again toward inside to the second position after the upper guide
member of each of the left side, right side and rear side jogging devices is swung to
the slanted position, and stops at the second position, and the upper guide member
10 of each of the left side, right side and rear side jogging devices is swung to the
horizontal position.

Sub 27
29. The sheet folding and jogging apparatus of Claim 20,
wherein the jogging device includes a leading edge stopping device configured
15 to stop the folded sheet to be conveyed so that the folded sheet is jogged with
respect to the leading edge thereof relative to a binding device, and
wherein the leading edge stopping device include a leading edge binding
position adjusting device configured to change a position the leading edge stopping
device stops the folded sheet to be conveyed so that a position in the folded sheet
20 relative to the leading edge thereof where the binding device binds the folded sheet
is changed.

30. An image forming and binding system, comprising:
an image formation controller configured to generate and transmit image or
25 document data with page and sheet size information and printing and binding
instructions thereof; and
an image forming apparatus configur d to form imag s of th image or

document data received from the image formation controller on both sides of a sheet according to the page and sheet size information and the printing and binding instructions and discharge the sheet,

wherein the image forming apparatus forms a second page image and a third page image of images of four pages of the image or document data on a first side of the sheet, which upwardly faces when the sheet is exited from the image forming apparatus, with the second page image at a leading edge side of the sheet in a direction the sheet is conveyed, and a first page image and a fourth page image of the images of four pages on a second side of the sheet, which downwardly faces when the sheet is exited from the image forming apparatus, with the first page image at the leading edge side of the sheet in the direction the sheet is conveyed, and

wherein the image formation controller controls the image forming apparatus to form the images of the image or document data starting from last four pages of the image or document data,

the system further including,

a binding apparatus including,

a controller to control an operation of the binding apparatus, the controller receiving the sheet size information and the binding instruction from the image formation controller,

a receiving device configured to receive the sheet discharged by the image forming apparatus and convey the sheet;

a sheet folding device configured to fold the sheet conveyed by the receiving device in two at a center portion thereof in the direction the sheet is conveyed according to the sheet size information and convey the folded sheet;

a jogging device including a jogging table, configured to receive and jog the folded sheet, conveyed by the sheet folding device, one after another, so as to be stacked into a stack of folded sheets on the jogging table according to the sheet

siz information;

a binding device configured to bind the stack of folded sheets stacked on the jogging table at an edge portion of the stack of folded sheets at the side where the folded portion of each folded sheet of the stack of folded sheets is

5 located according to the binding instruction; and

a discharging device configured to discharge the bound stack of folded sheets.

31. A binding apparatus, comprising:

10 receiving means for receiving a sheet from outside and conveying the sheet;
sheet folding means for folding the sheet conveyed by the receiving means in two at a center portion thereof in a direction the sheet is conveyed so as to be a folded sheet and conveying the folded sheet with the folded portion thereof being a leading edge of the folded sheet;

15 jogging means including a jogging table, for receiving and jogging the folded sheet, conveyed by the folding means, one after another, so as to be stacked into a stack of folded sheets on the jogging table;

binding means for binding the stack of folded sheets stacked on the jogging table at an edge portion of the stack of folded sheets at the side where the folded
20 portion of each folded sheet of the stack of folded sheets is located; and
discharging means for discharging the bound stack of folded sheets.

32. A jogging apparatus, comprising:

a jogging table on which a sheet may be stacked one after another;

25 leading edge stopping means for stopping a sheet conveyed from outside at a leading edge thereof;

left side jogging means for jogging the sheet with respect to a 1 ft side of the

sheet in a direction the sheet is conveyed;

right side jogging means for jogging the sheet with respect to a right side of the sheet; and

5 rear side jogging means for jogging the sheet with respect to a rear side of the sheet,

wherein each of the left side, right side, and rear side jogging means includes upper guiding means for guiding the sheet conveyed from outside onto the jogging table one after another so as to be stacked into a stack of sheets on the jogging table and jogging means for jog the stack of sheets stacked on the jogging table,

10 wherein the upper guiding means of each of the left side, right side and rear side jogging means is configured to swing between a horizontal position where the upper guiding means is substantially horizontal so as to hold down a previously conveyed sheet on the jogging table and so that the sheet conveyed from outside slides over an upper surface of the upper guiding means to be stopped by the
15 leading edge stopping means and a slanted position where the upper guiding means is upwardly slanted,

wherein each of the left side, right side and rear side jogging means is configured to move to a first position where the upper guiding means in the horizontal position separates from the folded sheet carried on the upper surfaces of
20 the upper guide members of the left side, right side and rear side jogging means and to a second position where the jogging means is in a position corresponding to a size of the sheet being conveyed from outside, and

wherein, when the sheet is received, each of the left side, right side and rear side jogging means is in the second position and the upper guiding means of each of
25 the left side, right side and rear side jogging means is in the horizontal position.

33. A sheet folding and jogging apparatus, comprising:

09896737.062901

receiving means for receiving a sheet from outside and conveying the sheet;

folding means for folding the sheet conveyed by the receiving means in two at a center portion thereof in a direction the sheet is conveyed so as to be a folded sheet, and conveying the folded sheet with the folded portion thereof being a leading edge of the folded sheet; and

jogging means including a jogging table, for receiving and jogging the folded sheet, conveyed by the folding means, one after another, so as to be stacked into a stack of folded sheets on the jogging table;

10 34. An image forming and binding system, comprising:

data generating means for generating and transmitting image or document data with page and sheet size information and printing and binding instructions thereof; and

15 image forming means for forming images of the image or document data received from the data generating means on both sides of a sheet according to the page and sheet size information and the printing and binding instructions and discharge the sheet,

20 wherein the image forming means forms a second page image and a third page image of images of four pages on a first side of the sheet, which upwardly faces when the sheet is exited from the image forming means, with the second page image at a leading edge side of the sheet in a direction the sheet is conveyed, and a first page image and a fourth page image of the images of four pages on a second side of the sheet, which downwardly faces when the sheet is exited from the image forming means, with the first page image at the leading edge side of the sheet in the direction the sheet is conveyed, and

25 wherein the image formation controlling means controls the image forming means to form the images of the image or document data starting from last four

pages of the image or document data,

the system further including,

a binding apparatus including,

controlling means for controlling an operation of the binding apparatus,

5 the controlling means receiving the sheet size information and the binding instruction from the data generating means,

receiving means for receiving and conveying the sheet discharged by the image forming means;

10 folding means for folding the sheet conveyed by the receiving means in two at a center portion thereof in the direction the sheet is conveyed according to the sheet size information and for conveying the folded sheet;

jogging means including a jogging table, for receiving and jogging the folded sheet conveyed by the folding means one after another into a stack of folded sheets on the jogging table according to the sheet size information;

15 binding means for binding the stack of folded sheets stacked on the jogging table at an edge portion of the stack of folded sheets at the side where the folded portion of each folded sheet of the stack of folded sheets is located according to the binding instruction; and

discharging means for discharging the bound stack of folded sheets.

20

35. A method of binding sheets, comprising:

receiving a sheet from outside and conveying the sheet;

folding the conveyed sheet in two at a center portion thereof in a direction the sheet is conveyed so as to be a folded sheet and conveying the folded sheet
25 with the folded portion of the fold sheet being a leading edge of the folded sheet with a sheet folding device ;

receiving and jogging the conveyed folded sheet one after another so as to

b stacked into a stack of folded sheets with a receiving/jogging device;

binding the stack of stacked folded sheets at an edge portion of the stack of folded sheets at the side where the folded portion of each folded sheet of the stack of folded sheets is located with a binding device; and

5 discharging the bound stack of folded sheets.

36. The binding method of Claim 35, further comprising:

receiving information on a size of the sheet,

wherein the folding/conveying includes,

10 receiving and guiding the conveyed sheet,

setting a position where the conveyed sheet is stopped to be conveyed according to the size of the sheet so that the sheet is folded by the sheet folding device at the center portion of the sheet,

15 stopping the sheet to be conveyed at the position, so that the center portion of the sheet is downwardly slackened, the slackened center portion of the sheet is pinched into the sheet folding device, and thereby the sheet is folded in two at the center portion of the sheet by the sheet folding device.

37. The binding method of Claim 36,

20 the folding/conveying further including,

detecting a leading edge of the sheet, and

25 pushing the slackened center portion of the sheet toward the sheet folding device with a pushing device at a predetermined timing after the detection of the leading edge of the sheet, so that the slackened center portion of the sheet is pinched into the sheet folding device.

38. The binding method of Claim 37,

th pushing device including a saw-toothed knife to push the slack ned
center portion of the sheet, and

wherein, the pushing includes perforating the sheet at the pushed center
portion of the sheet with the saw-toothed knife.

5

39. The binding method of Claim 35,

wherein the sheet folding device includes a pair of sheet folding rollers and a
pair of supplementary pressing rollers,

10 wherein the pair of supplementary pressing rollers is arranged downstream of
the pair of sheet folding rollers in the direction the folded sheet is conveyed and is
angled relative to the pair of sheet folding rollers, and a distance between a nip
portion of the pair of supplementary rollers and a nip portion of the pair of the sheet
folding rollers at a position corresponding to a widthwise edge of the folded sheet, at
15 a side of a widthwise direction where the pair of the supplementary rollers and the
pair of sheet folding rollers are farther separated from each other, is shorter than a
length of the folded sheet in the direction the folded sheet is conveyed, and

wherein the folding/pressing includes folding the sheet with the pair of sheet
folding rollers and pressing the folded sheet with the pair of supplementary pressing
rollers.

20

40. The binding method of Claim 35, further comprising:

receiving information on a size of the sheet and determining a size of the
folded sheet folded at the center of the sheet;

25 wherein the jogging device includes a leading edge stopping device to stop
the folded sheet, an upper guide member to guide the folded sheet conveyed by the
sheet folding device and a jogging member to jog th folded sheet,

wherein the r ceiving/jogging includ s,

sliding the conveyed folded sheet over an upper surface of the upper guide member of the jogging device, which is in a substantially horizontal position, to be stopped by the leading edge stopping device and to be carried on the upper surface of the upper guide member,

5 moving the jogging device to a first position where the folded sheet carried on the upper surface of the upper guide member separates from the upper guide member to fall onto the jogging table,

swinging the upper guide member from the horizontal position to a slanted position where the upper guide member is upwardly slanted, and

10 moving the jogging device to a second position where the jogging member of the jogging device is in a position corresponding to the size of the folded sheet being received.

41. The binding method of Claim 40,

15 wherein the folding device further includes a detect device to detect that the folded sheet is discharged toward the jogging device and a sheet center thrusting device to downwardly thrust the folded sheet carried on the upper surface of the upper guide member of the jogging device, and

wherein the receiving/jogging further includes;

20 detecting that the folded sheet is discharged toward the jogging device with the detect device, and

swinging the sheet center thrusting device between a substantially horizontal position where the sheet center thrusting device downwardly thrusts the folded sheet carried on the upper surface of the upper guide member of the jogging device and a slanted position where the sheet center thrusting device is upwardly slanted.

25

conveyed according to the size of the sheet so that the sheet is folded by the sheet folding device at the center portion of the sheet,

stopping the sheet to be conveyed at the position, so that the center portion of the sheet is downwardly slackened, the slackened center portion of the sheet is pinched into the sheet folding device, and thereby the sheet is folded in two at the center portion of the sheet by the sheet folding device.

46. The folding/jogging method of Claim 45,

the folding/conveying further including,

detecting a leading edge of the sheet, and

pushing the slackened center portion of the sheet to the sheet folding device with a pushing device at a predetermined timing after the detection of the leading edge of the sheet, so that the slackened centered portion of the sheet is pinched into the sheet folding device.

47. The folding/jogging method of Claim 46,

the pushing device including a saw-toothed knife to push the slackened center portion of the sheet, and

wherein, the pushing includes perforating the sheet at the pushed center portion of the sheet.

48. The folding/jogging method of Claim 44,

wherein the sheet folding device includes a pair of sheet folding rollers and a pair of supplementary pressing rollers,

wherein the pair of supplementary pressing rollers is arranged downstream of the pair of sheet folding rollers in the direction the folded sheet is conveyed and is angled relative to the pair of sheet folding rollers, and a distance between a nip

portion of the pair of supplementary rollers and a nip portion of the pair of the sheet folding rollers at a position corresponding to a widthwise edge of the folded sheet, at a side of a widthwise direction where the pair of the supplementary rollers and the pair of sheet folding rollers are farther separated from each other, is shorter than a length of the folded sheet in the direction the folded sheet is conveyed, and

wherein the folding/pressing includes folding the sheet with the pair of sheet folding rollers and pressing the folded sheet with the pair of supplementary pressing rollers.

49. The folding/jogging method of Claim 44, further comprising:
receiving information on a size of the sheet and determining a size of the folded sheet folded at the center of sheet;

wherein the jogging device includes a leading edge stopping device to stop the folded sheet, an upper guide member to guide the folded sheet conveyed by the sheet folding device and a jogging member to jog the folded sheet,

wherein the receiving/jogging includes,

sliding the conveyed folded sheet over an upper surface of the upper guiding member of the jogging device, which is in a substantially horizontal position, to be stopped by the leading edge stopping device and to be carried on the upper surface of the upper guide member,

swinging the upper guide member from the horizontal position to a slanted position where the upper guide member is upwardly slanted,

moving the jogging member to a second position where the jogging member is in a position corresponding to the size of the folded sheet being received.

50. The folding/jogging method of Claim 49,

wherein the folding device further includes a detect device to detect that the

folded sheet is discharged toward the jogging device and a sheet center thrusting device to downwardly thrust the folded sheet carried on the upper surface of the upper guide member of the jogging device, and

wherein the receiving/jogging further includes;

5 detecting that the folded sheet is discharged toward the jogging device with the detect device, and

swinging the sheet center thrusting device between a substantially horizontal position where the sheet center thrusting device downwardly thrusts the folded sheet carried on the upper surface of the upper guide member of the jogging device and a slanted second position where the sheet center thrusting device is upwardly slanted.

51. The folding/jogging method of Claim 50,

wherein in the binding, the jogging member of the jogging device is in the second position, the upper guide member is in the horizontal position, and the sheet center thrusting device is in the horizontal position.

52. The folding/jogging method of Claim 44,

the receiving/jogging including;

20 stopping the folded sheet to be conveyed at a leading edge of the folded sheet so that the folded sheet is jogged relative to the binding device, and

adjusting a position to stop the folded sheet so that that a position in the folded sheet relative to the leading edge thereof where the binding device binds the stacked folded sheet is changed.

25

53. A method of forming images on sheets and binding the sheets, comprising:

generating image or document data with page and sheet size information and printing and binding instructions thereof;

forming images of the image or document data on both sides of a sheet, according to the page and sheet size information and the printing instruction thereof,

5 starting from last four pages of the image or document data, such that a second page image and a third page image of images of four pages of the image or document data are formed on a first side of the sheet, which upwardly faces when the sheet is exited from the image forming apparatus, with the second page image at a leading edge side of the sheet in a direction the sheet is conveyed, and a first page image and a fourth page image of the images of four pages of the image or document data are formed on a second side of the sheet, which downwardly faces when the sheet is exited from the image forming apparatus, with the first page image at the leading edge side of the sheet in the direction the sheet is conveyed;

10 folding the sheet in two at a center portion thereof in the direction the sheet is conveyed according to the sheet size information so as to be a folded sheet;

stacking and jogging the folded sheet into a stack of folded sheets according to the sheet size information;

binding the stack of folded sheets at an edge portion of the stack of folded sheets at the side where the folded portion of each folded sheet of the stack of folded sheets is located with a binding device according to the binding instruction; and

discharging the bound stack of folded sheets.